



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/647,250

08/26/2003

Akira Ueda

1614.1360

2448

21171

7590

01/12/2006

STAAS & HALSEY LLP

SUITE 700

1201 NEW YORK AVENUE, N.W.

WASHINGTON, DC 20005

EXAMINER

BROOME, SAID A

ART UNIT

PAPER NUMBER

2671

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/647,250	<b>Applicant(s)</b> UEDA ET AL.	
	<b>Examiner</b> Said Broome	<b>Art Unit</b> 2671	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. This office action is in response to an amendment filed 11/23/2005.
2. Claims 1, 11, 12 and 13 are amended.
3. Claims 2-10 are original.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arakawa (US Patent 5,398,307) in view of Tampieri (US Patent 6,366,283).

Arakawa teaches the limitations of claims 1 and 10-13 except for the reduction of cube elements by combining the cube elements. Arakawa illustrates forming grid lines over an object, in Figure 3, and forming cube data from mesh data by dividing the object by grid lines in Figure 2, which is disclosed in claims 1 and 11-13. Arakawa also teaches obtaining the cube data by determining whether the mesh elements form the desired object in column 1 lines 23-26 where it is explained that the mesh-divided space is determined based on the configuration or shape of the target object based on a condition, which is disclosed in claim 2. Arakawa also teaches what is disclosed in claim 3 in column 1 lines 29-37, where it is stated that the condition of the previous

claim is the ratio of the volume of the object to the volume of the mesh element. Arakawa describes the division and forming of mesh data is dependent of the ratio of the volume of the object to the ratio of the volume of the mesh elements or cells, which are illustrated in Figure 2. As previously stated, Arakawa fails to teach the reduction of cube elements by combining cube elements. Tampieri illustrates combining cell elements in Figure 6, and describes this combination in column 7 lines 19-29. Although Tampieri describes combining cell elements of a 2D surface, the method is done in a 3D environment and can therefore be used to reduce cube elements as well. Tampieri describes combining small elements of the mesh into larger elements under the condition that the combination of elements does not significantly affect the shape or quality of the mesh. Tampieri teaches the combining of elements only when the shape and image quality of the object is maintained as disclosed in claim 4, the preservation of the shape of the target object as disclosed in claim 5, the preservation of the volume illustrated in Figure 6 as disclosed in claims 6 and 7, and the combination of mesh elements containing an aspect ratio within a certain range as illustrated in Figure 6, as disclosed in claim 8. The aspect ratio of each combined cube element is described in column 7 lines 19-23, where it is apparent that the ratio of the surface of each combined element is held within the overall range of the object after the combination since the overall shape of the object remains constant and thus the ratio remains the same as well, which is also illustrated in Figure 6 from object 604 to 607. Later Tampieri teaches the limitation of claim 9, that each element has a rectangular parallelepiped shape, and that the aspect ratio of each surface of each combined element is a ratio of two orthogonal sides. The element 609 of Figure 6 is shown to have an aspect ratio of two surfaces, which are orthogonal to each other. Tampieri also illustrates in Figure 6 what is disclosed in claim 10,

Art Unit: 2671

which describes the reduction of grid lines as the mesh elements are reduced. Therefore it would have been obvious to one of ordinary skill in the art to combine the formation of grid lines over an object that results in forming cube data from mesh data as taught by Arakawa with a reduction of mesh elements as taught by Tampieri, by combining mesh elements under a certain condition. Motivation for this combination is the improved accuracy of the analysis mesh by forming grid lines over the object, and combining the smaller elements of the formed cube data into larger elements thereby sustaining the volume and shape of the object while reducing the amount of mesh data and computation time.

It is also evident that Arakawa describes the method of generating mesh data, which is disclosed in the preamble of claim 1, in column 1 lines 9-13. The computer-readable recording medium for storing an executable program, as well as an apparatus for generating mesh data, which are described in the preamble of claims 12 and 13 respectively, are both shown in Figure 1, and are summarized in column 4, lines 22-40.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because it contains the statement: "a program for causing a computer to execute", which is non-statutory subject matter because a program must be embodied on a computer readable medium for causing the computer to execute in order to be considered statutory subject matter. This rejection may be overcome by deleting the

Art Unit: 2671

beginning of claim 11, which reads “ A program for causing a computer to execute”, and direct the claim towards a method of generating mesh data or by reciting the program to be embodied in a computer readable media for causing the computer to execute.

### ***Response to Arguments***

Applicant's arguments filed 11/23/2005 have been fully considered but they are not persuasive.

The applicant argues that the reference Tampieri used in the 103(a) rejection of claims 1-13 does not teach the combining of mesh elements. The examiner maintains the rejection because Tampieri teaches the combining of mesh elements in column 7 lines 21-22 and in line 66, where it is described that mesh elements, such as the element 606 of object 604, are combined into larger mesh elements, such as element 609 of object 607, thereby reducing the number of mesh elements in the scene. It is also apparent from Figure 6 that the mesh elements are combined into larger mesh elements, with respect to the transition from object 604 to 607, while remaining rectangular parallelepipeds during combination. The mesh elements are cube elements because the objects in the scenes 604 and 607 are clearly three-dimensional rectangular objects, as described in column 1 lines 66-67 and in column 2 lines 1-2, therefore the mesh elements are cube elements.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2671


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571) 272-2931. The examiner can normally be reached between 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Broome  
12/7/2005 SB

  
RICHARD HJERPE 12/12/05  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600